Marine Life Protection Act Initiative

Marine Habitats and Ecosystems

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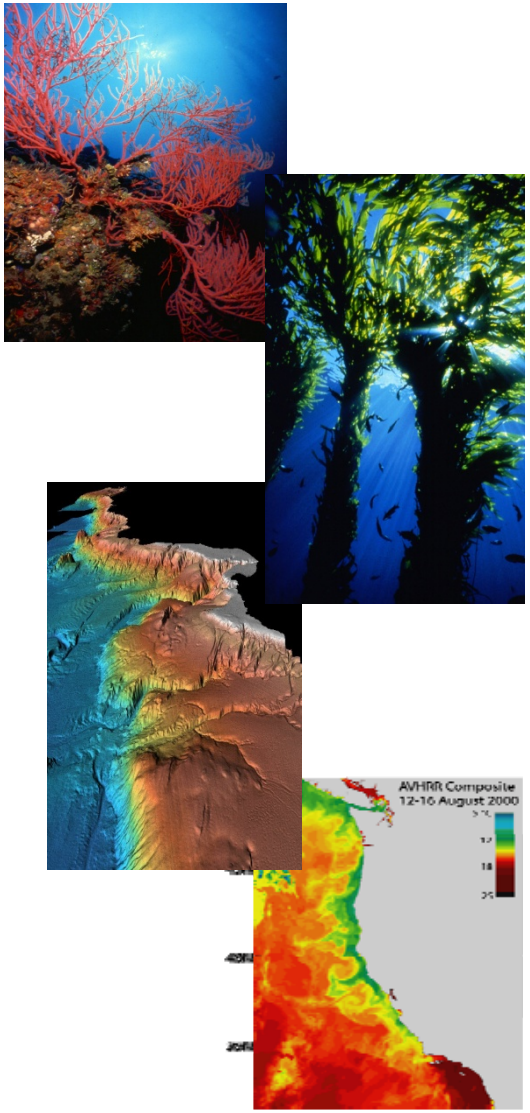
Marine Life Protection Act Goals

1. Protect **natural diversity** and **ecosystem functions**.
2. Sustain and restore marine life **populations**.
3. Improve recreational, educational, and study **opportunities**.
4. Protect representative and unique **habitats**.
5. Clear objectives, effective management, adequate enforcement, sound science.
6. Ensure that MPAs are designed and managed as **a network**.



Goals for Habitats and Ecosystems

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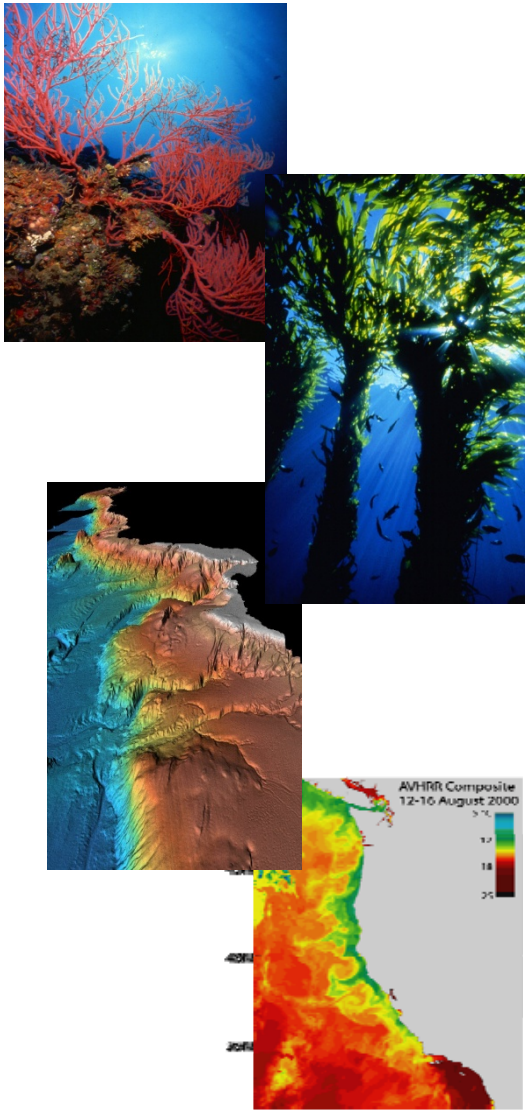
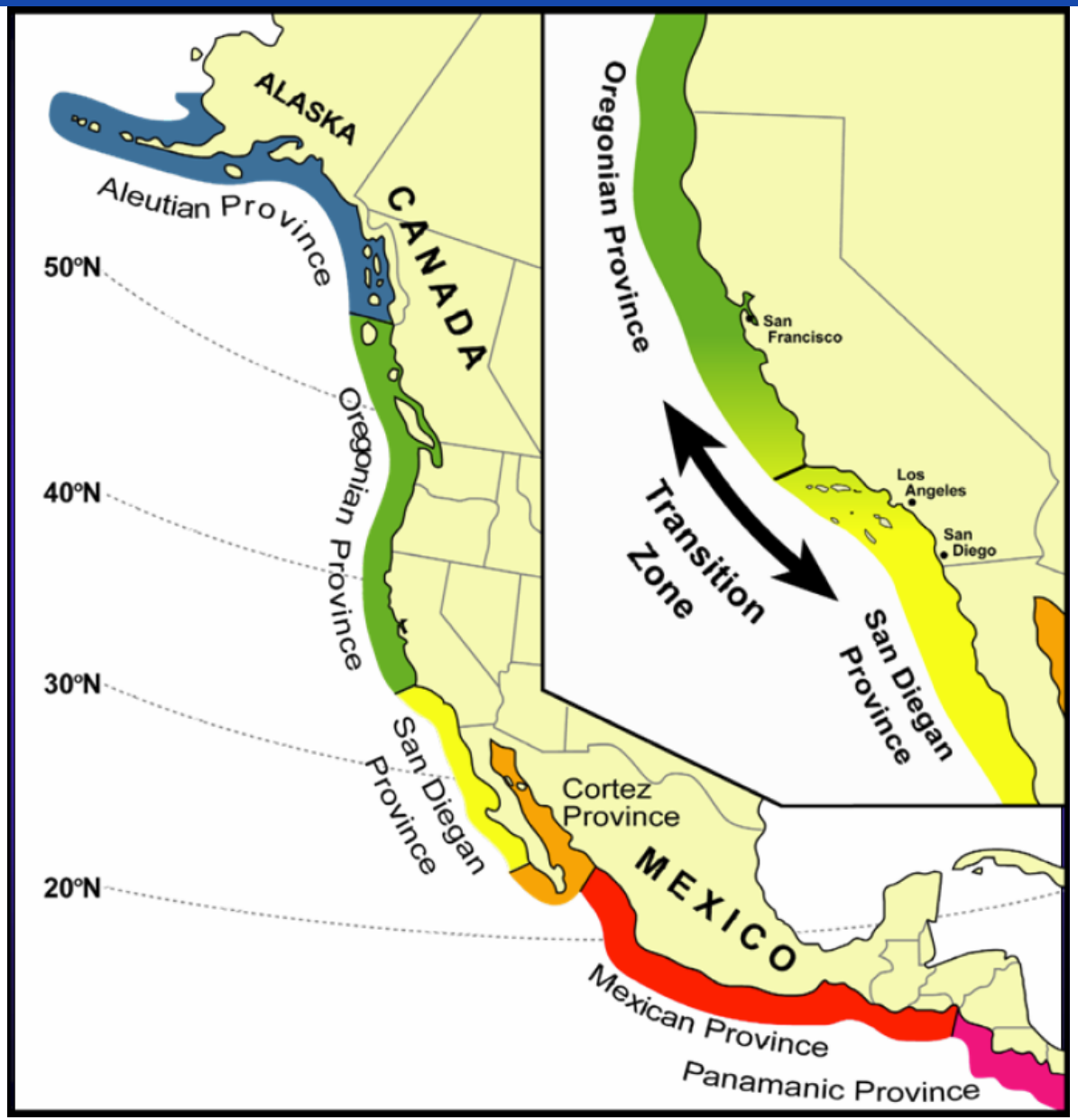
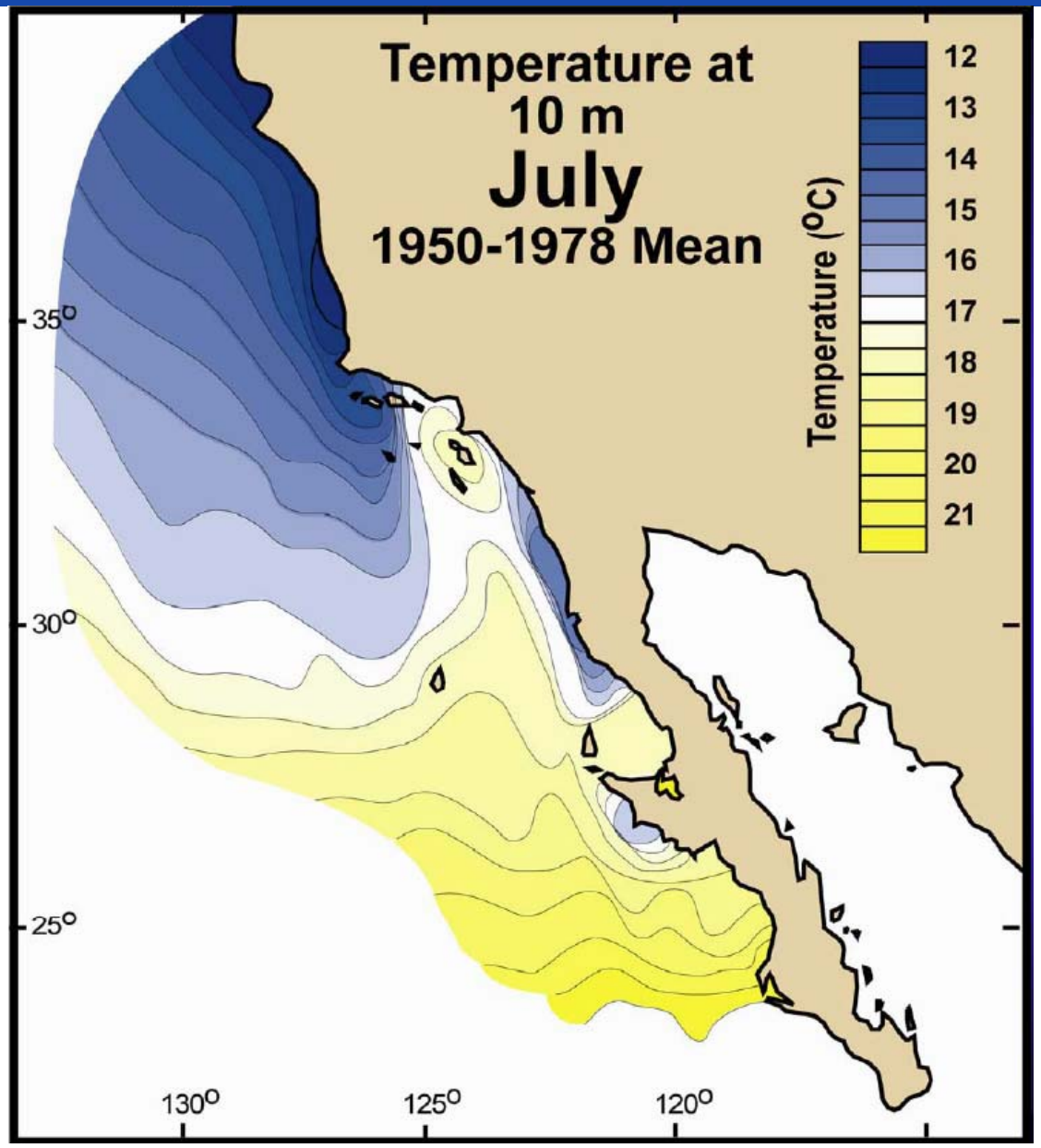


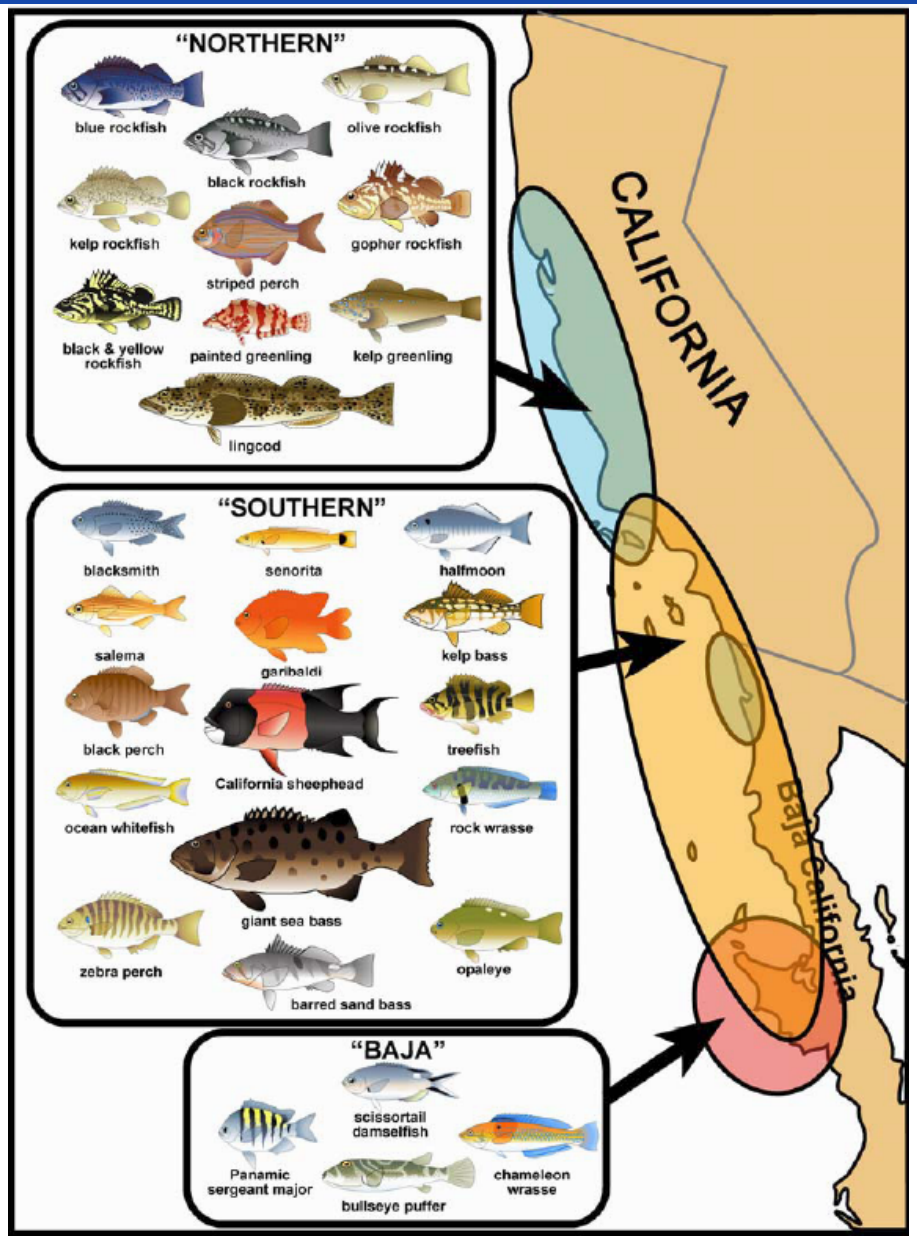
Biogeographical Regions (Provinces)



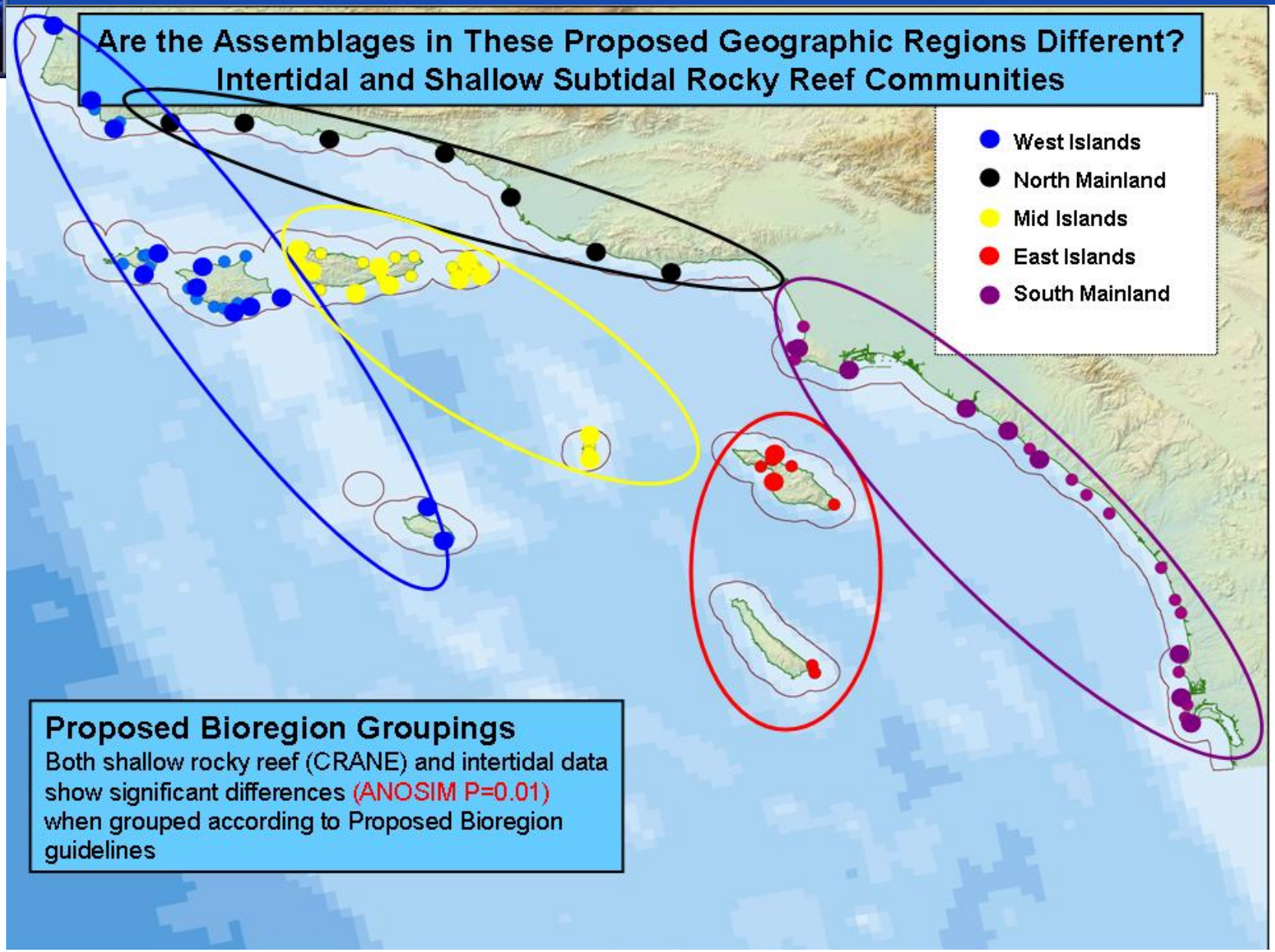
Oceanographic Habitats



Fish Assemblages by Biogeographical Regions



South Coast Bioregions



Key Marine Habitats

Marine Habitats

- Intertidal zones
- Estuaries
- Rocky reefs
- Sandy/soft ocean bottoms
- Underwater pinnacles
- Submarine canyons

Depth Zones

- Intertidal
- Intertidal to 30 meters
- 30 to 100 meters
- 100 to 200 meters
- 200 meters and deeper

Biogenic Habitats

- Kelp forests
- Seagrass beds

Oceanographic Habitats

- Upwelling areas
- Freshwater plumes
- Retention zones

Unique Marine Habitats

- Surfgrass beds
- Eelgrass beds
- Oil seeps and shallow hydrothermal vents
- Elk kelp beds

Photo: Stanford University Slide Library

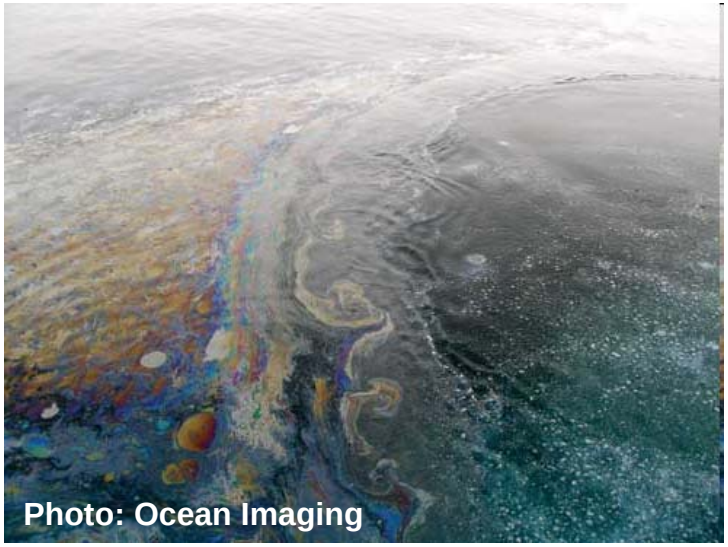


Photo: Ocean Imaging

Photo: Starthrower.org

South Coast Marine Habitats

From the Regional Profile of the MLPA South Coast Study Region

Habitat	Total Amount (linear or square miles)
Total Study Area	2354.5 square miles
Sandy or gravel beaches	379.9 miles
Rocky intertidal	280.5 miles
Coastal marsh	3.1 square miles
Tidal flats	28.6 miles
Estuary	36.6 square miles
Surfgrass	57.9 miles
Eelgrass	18.1 square miles
Persistent Kelp	21.7 square miles

South Coast Seafloor Habitats

From the Regional Profile of the MLPA South Coast Study Region

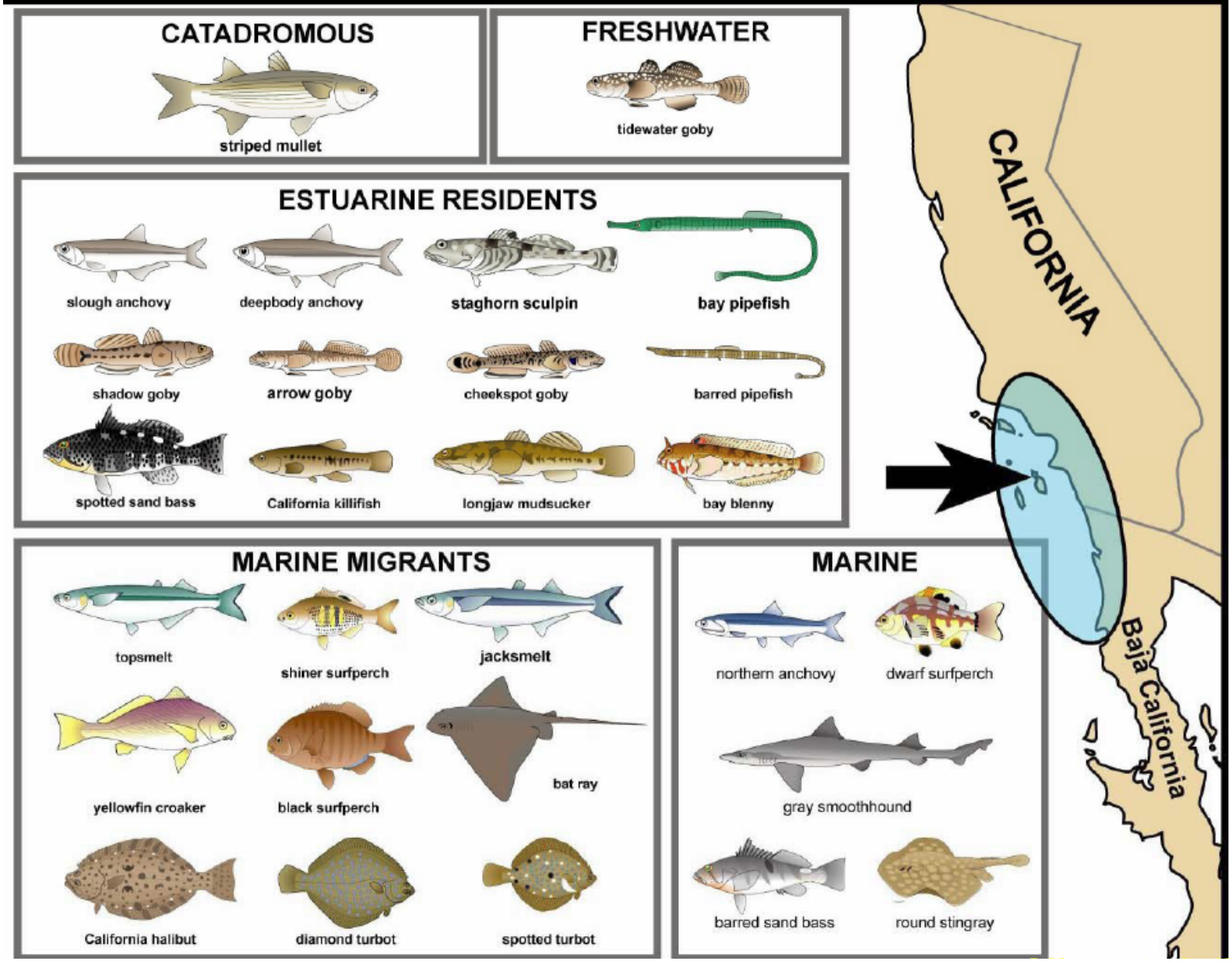
Habitat (Bottom Type)	Total Amount (linear or square miles)
Total Study Area	2354.5 square miles
Soft (0 - 30 meters)	466.6 square miles
Soft (30 - 100 meters)	780.1 square miles
Soft (100 - 200 meters)	140.6 square miles
Soft (200 - 3000 meters)	317.0 square miles
Hard (0 - 30 meters)	190.1 square miles
Hard (30 - 100 meters)	200.2 square miles
Hard (100 - 200 meters)	101.1 square miles
Hard (200 - 3000 meters)	97.1 square miles

Shoreline Habitats (Intertidal)

- Sandy beaches cover more than 35% of the south coast study region
- Rocky shores cover approximately 25% of the south coast study region
- Marshes and tidal flats are important habitats, but are less common

Photo: National Park Service

Bays and Estuaries

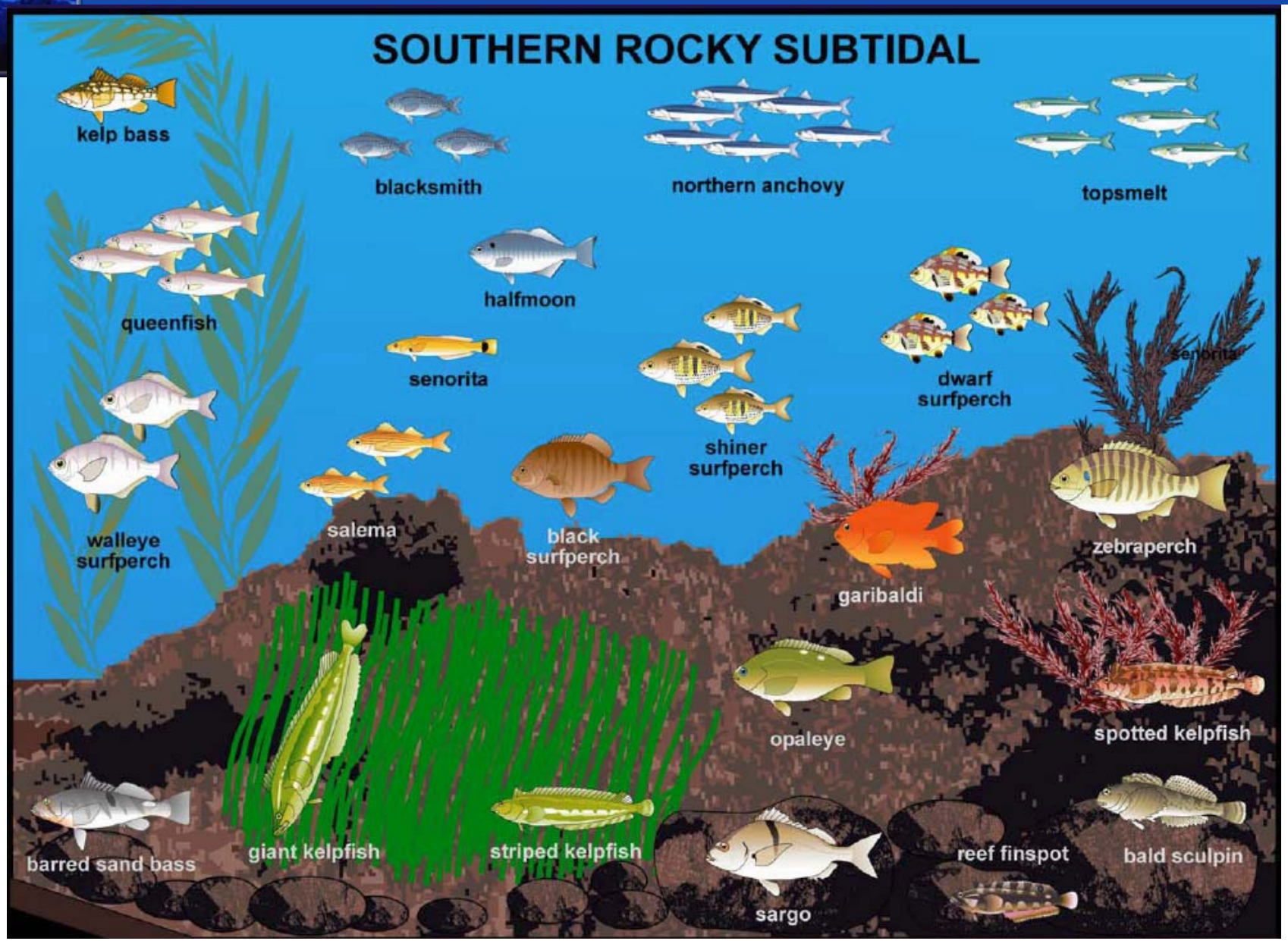


Allen et al. 2006

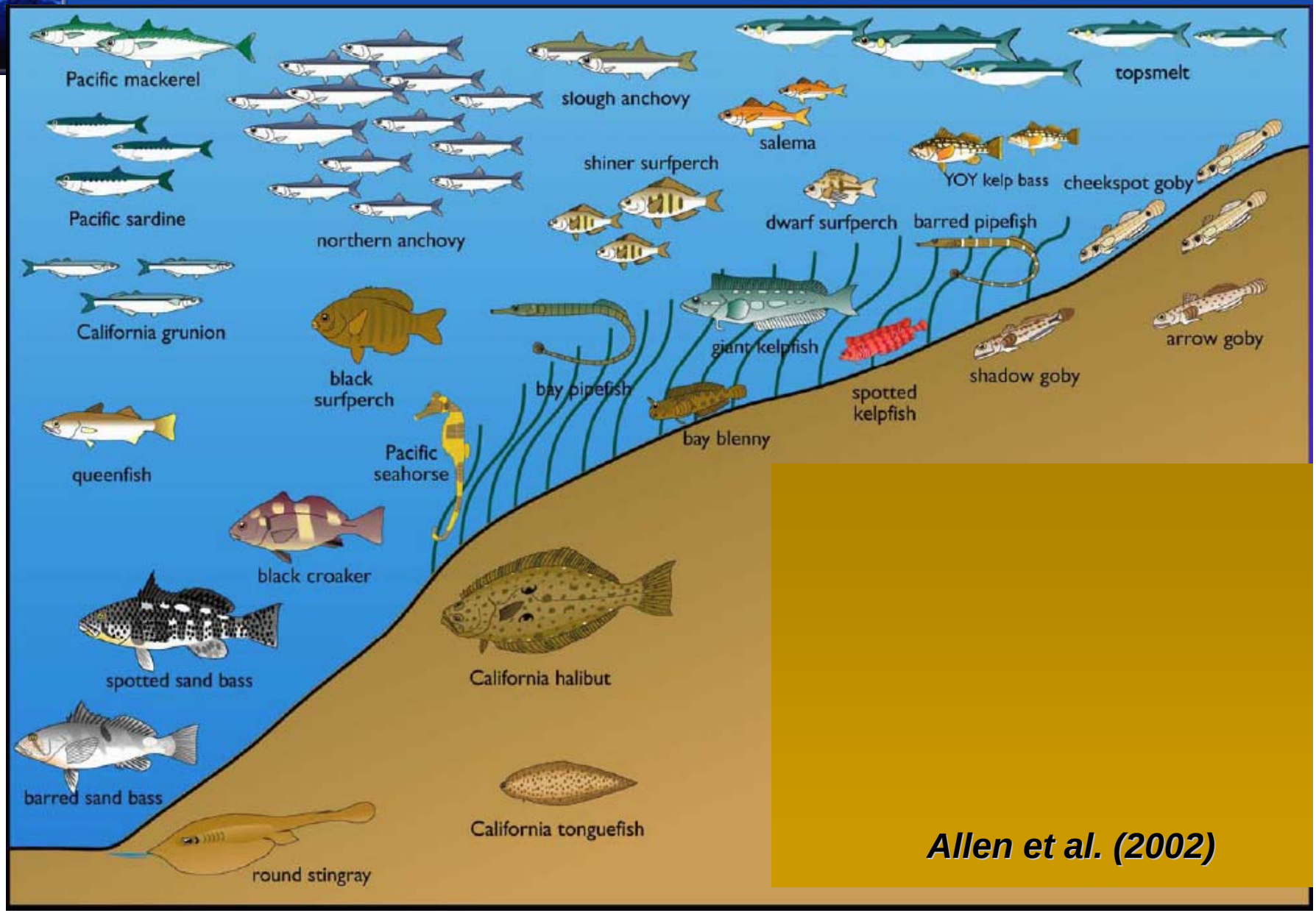
Seagrass Beds

- Surfgrass (*Phyllospadix* spp.) occupies 7.1% of the nearshore coast of southern California.
  - Forms beds that fringe rocky coastline in shallow waters.
  - Important habitat for a variety of fish, invertebrates, and algae.
- Eelgrass (*Zostera* spp.) occupies less than 1% of the coastline of southern California.
  - Forms beds in estuaries and sheltered coves and bays.
  - Provides refuge, foraging, breeding and nursery areas for invertebrates, fish and birds.

Surfgrass Beds



Eelgrass Beds



Soft and Hard Bottom Habitats

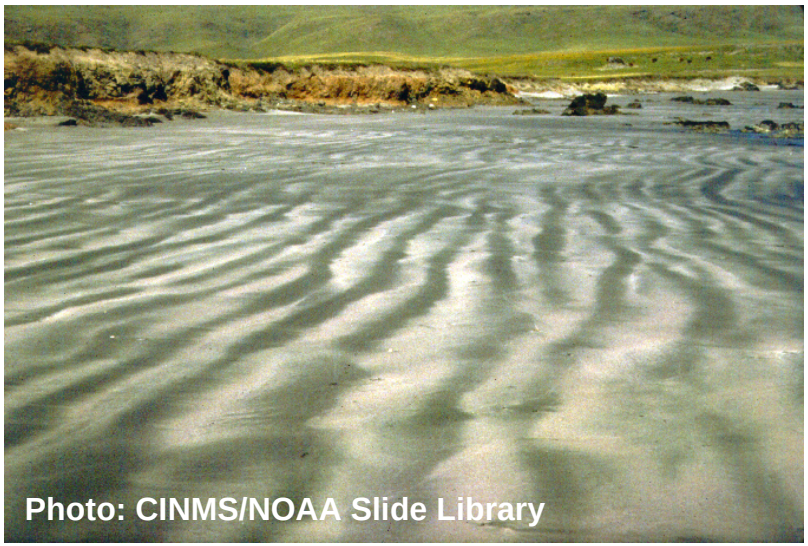


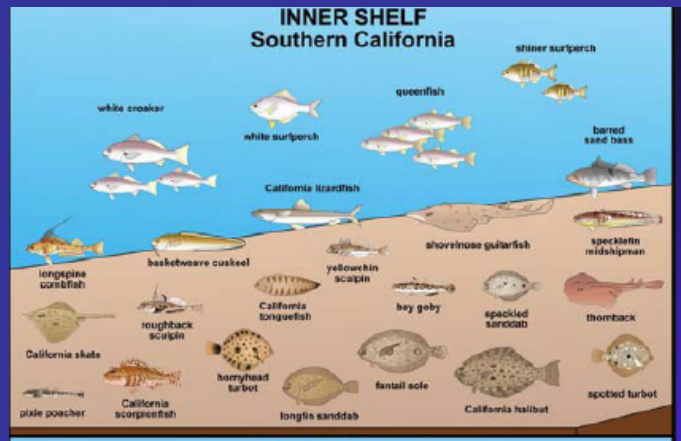
Photo: CINMS/NOAA Slide Library

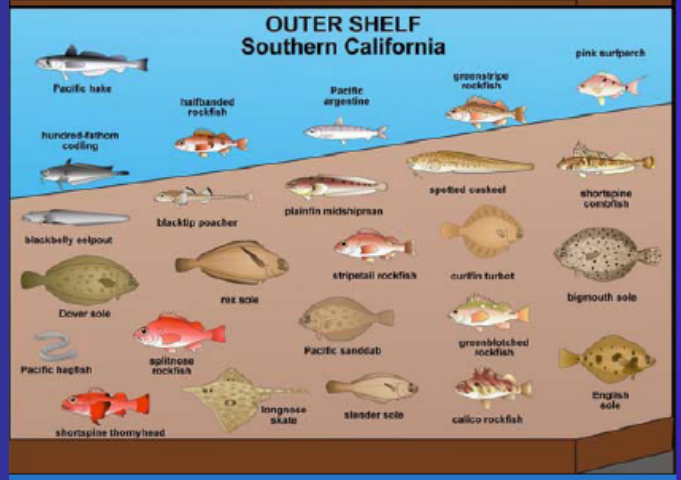
Photo: CINMS/NOAA Slide Library

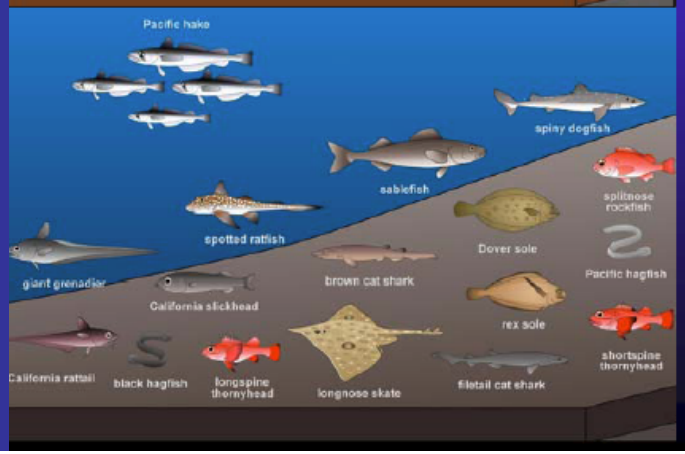
- Soft bottom dominates the seafloor within the south coast study region covering almost 75%.
- Hard bottom, including rocky reef, bedrock and boulder, is less common, but supports higher diversity, including kelp forests, deep coral and sponges.

Soft Bottom

Rocky Bottom





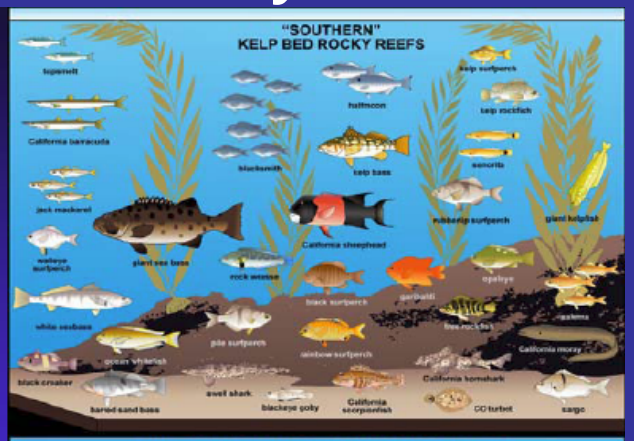


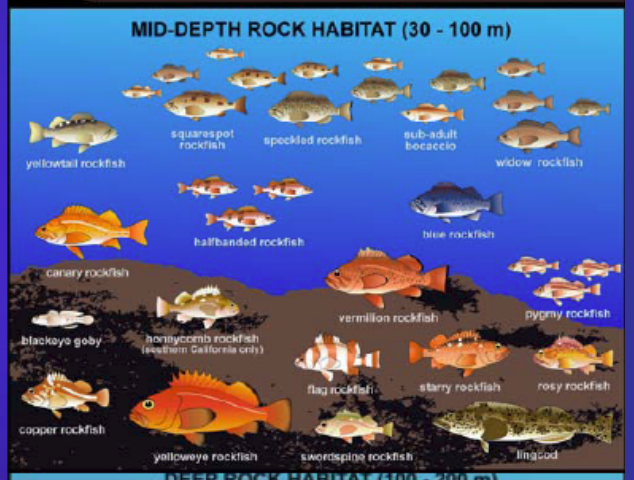
0-30 m

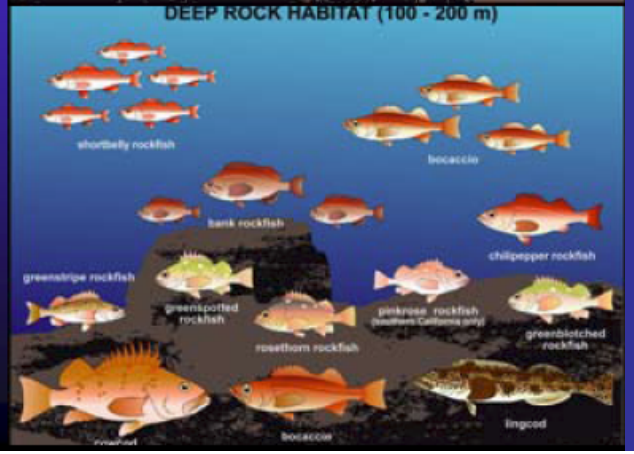
30-100 m

100-200 m

© Allen et al.(2006)





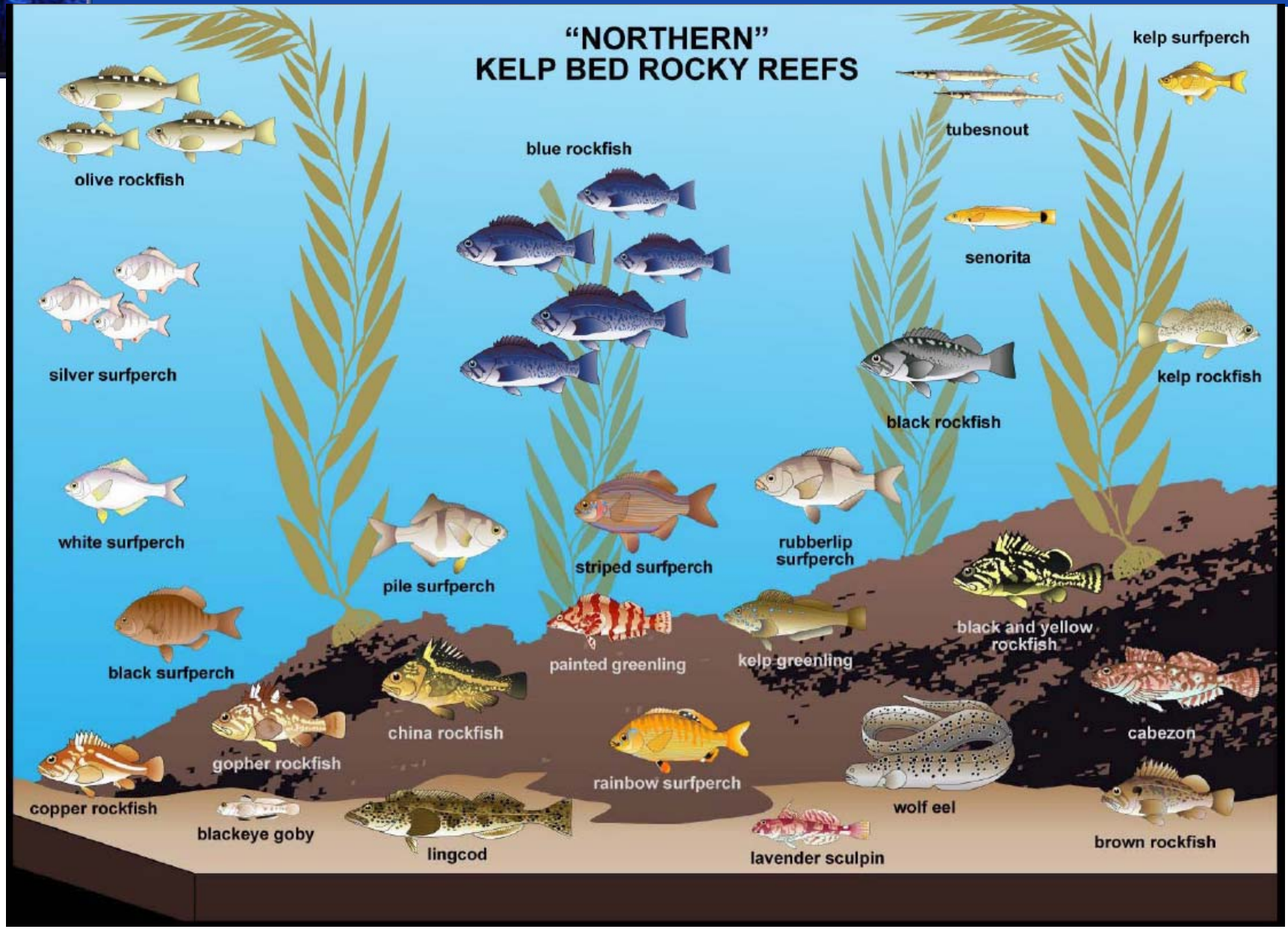


Kelp Forest

- Kelp forest averages nearly 22 square miles (0.9% of the south coast study region)
- Dominated by giant kelp (*Macrocystis pyrifera*)
- Occupies cool water from 20 to 100 feet depth, generally on bedrock, boulders and reefs
- Provides habitat, feeding grounds and nursery areas for fish, invertebrates, and marine mammals

Photo: Mark Conlin

Northern Kelp Bed and Rocky Reef



blue rockfish

olive rockfish

kelp rockfish

rainbow seaperch

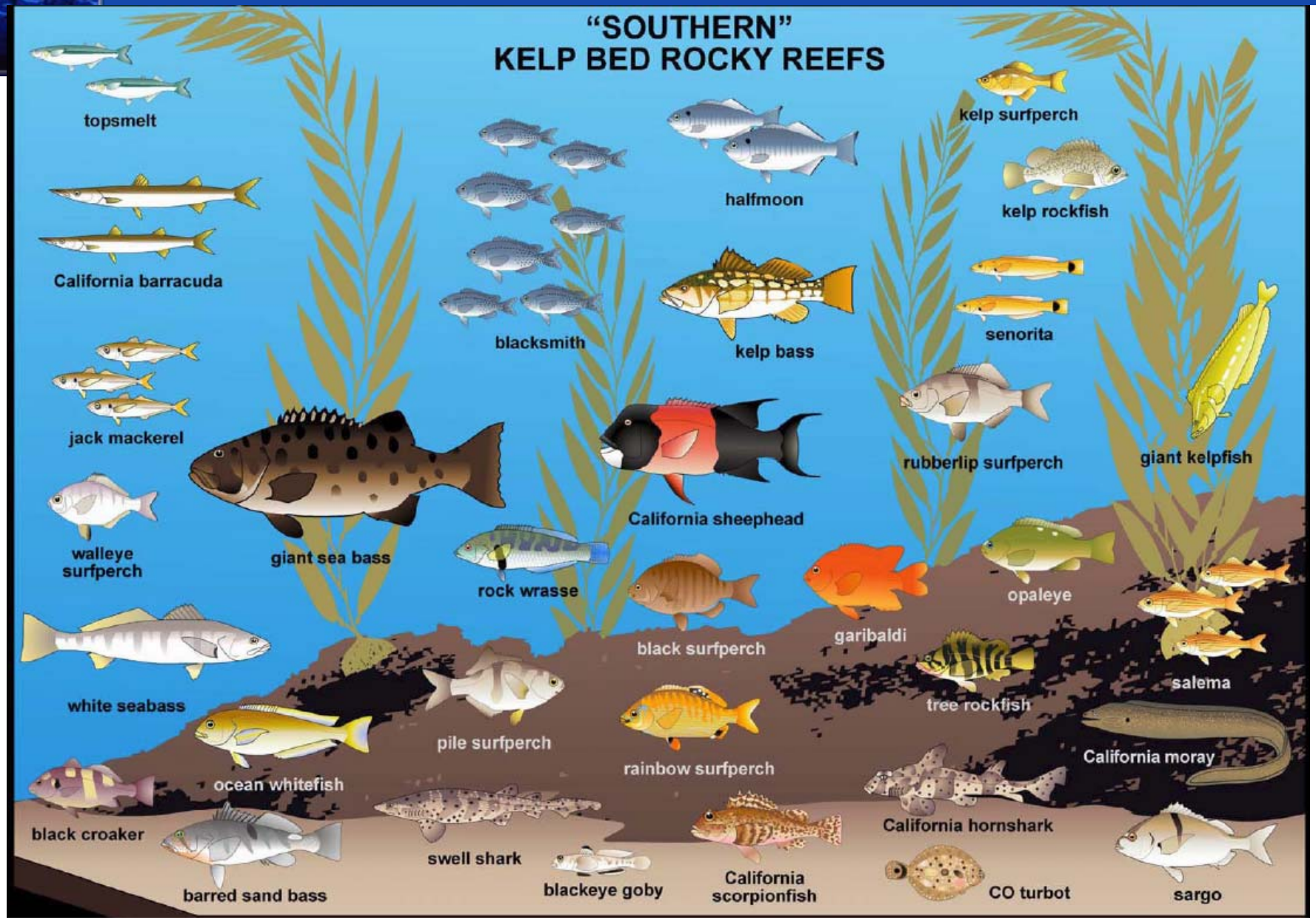
striped perch

cabezon

lingcod

gopher rockfish

Southern Kelp Bed and Rocky Reef



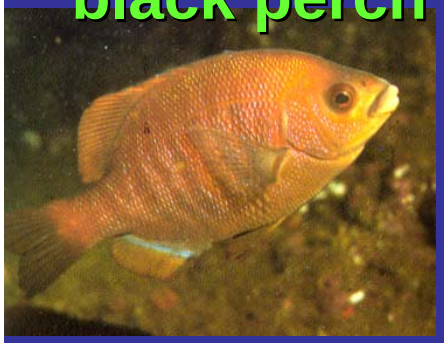
kelp bass

blacksmith

halfmoon

senorita

black perch



kelp perch

rock wrasse

garibaldi

Giant sea bass

opaleye

California sheephead

Commercial & recreational species

(that can be associated with reefs)

CA barracuda

Pacific bonito

yellowtail

white seabass

California halibut

Applying Habitat Knowledge

Given the complexity and variability of marine habitats, design MPAs to include:

- Key and unique marine habitats, characterized by seafloor type, depth, oceanographic properties and biogenic structure.
- Multiple examples (replicates) of each habitat type within a network of MPAs.
- A mixture of habitat types in each MPA to protect the greatest number of species.